

GLOBAL COOPERATION AND INNOVATION IN THE TWENTY FIRST CENTURY: THE STRATEGIC MOVE OF THE COMPLUTENSE LIBRARY

Javier García García (UCM)

Eugenio Tardón (UCM)

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Abstract

Libraries must redefine their identity in the dynamic environment of the 21st century in order to persevere in their fundamental mission: to offer quality contrasted information and the best services adapted to the changing needs of its users. The strategy to do so is based on two tools that are co-implicated: library cooperation and innovation. Cooperation must be innovative and redefined for a global and networked world. It should promote the renewal of infrastructures, provide greater negotiating force in the acquisition of collections, encourage more open access to scientific production, optimize internal library work processes and qualitatively transform the services offered. Innovation requires a strong technological impulse and global cooperative service platforms self-managed by and for libraries, which is the only strategy to guarantee their survival. The Library of the Complutense University of Madrid (UCM), in the field of university libraries, has for years been committed to global cooperative projects that allow long-term preservation - through adhesion to HathiTrust - and the maximum dissemination of its collections - thanks to participation in Google Books-, as well as contribute to the construction of a global infrastructure of library services - through the progressive integration in OCLC and the adoption of WMS-, services that are sustainable and efficient and are in constant evolution for the benefit of society.

Keywords: University Libraries, Cooperation, Innovation, Strategy, Management, HathiTrust, Google Books, OCLC, WMS

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1. A framework for decision-making: strategy, innovation and cooperation.

In a global world of constant change people must build their own identity (Bauman, 2002). The same must happen with institutions, including libraries, if they intend to remain socially useful in a constantly changing environment. The digital revolution and the constant technological advances; the new habits of reading from a screen that, along with the “informative pills” of virtual campuses, question the traditional document typology as much in its print version as in its digital one; communication methods and networked learning; economic uncertainty and continuing disinvestment in public services, promoted by global neoliberalism¹, just like the rise and the increasing monopolistic concentration of academic and scientific information and the technological platforms that allow it to be managed, evaluated and accessed... all these factors put the library before an uncertain and worrying future. Libraries can prepare a strategy that allows them to adapt and obtain the best possible opportunities that this new global context offers, or, they will be increasingly cornered and neglected by society and its sponsoring institutions at all levels.

Strategy is a response to an important challenge: the true work consists of understanding what is the challenge that libraries are facing when understanding and evaluating their general environment (Chad, 2014). There is, then, a clear link or tie between the strategy and the environment. To the extent that the strategy always depends on the environment and it isn't always possible to maintain the same strategy when the uncertainty of the environment changes, it goes from low uncertainty to high and vice versa. For that reason, that very link becomes more concrete and has a constraining effect on strategy due to uncertainties in the environment that surrounds it. This last concept is very important so it's worth clarifying: it's referring to the volume of information sent to a concrete system, in our case the library system. We're dealing with a variable that depends on how complex or rich the environmental behaviour is, in other words

the variability of what the system is accessing (Wagensberg, 1998).

Why is this environmental uncertainty so important for our library? Because just like any other individual, be it a human being or an organisation (in this case, a university library), its fundamental priority is to preserve, maintain an identity, continue to exist, continue to know. And this axiological preference demands a response to the following question: what alternatives do we have in order to survive when environmental uncertainty increases? Libraries always have had and continue to have clear their fundamental mission: to provide quality information free for their users. But, how can they guarantee the fulfilment of their mission in the global changing environment of the twenty first century? What will we do to avoid losing our role in favour of other possible emerging agents, perhaps more efficient, to fulfil our traditional mission in the new environment?

One thing is clear in university libraries: we have very high levels of uncertainty compared with any period in the past. If we look back, we can see that throughout the twentieth century that complexity was substantially lower than at present, it favoured the specialisation strategies, used in the past but that today are very dangerous and immobilizing. The motive? Well that the specialist (and the libraries and librarians were specialists) do not have to compete, anticipate, look after themselves, go fast or go out and look (Wagensberg, 2004). But that specialisation of the past makes libraries extremely fragile when the environment is disrupted. It is the time of decision making: to be or not to be. And the question becomes: what options do libraries have to survive?

The answer, like the equation, is clear: a rise in uncertainty requires an increase in complexity within the library system. From our point of view, the two fundamental tools that libraries have at their disposal to redefine themselves, manage the threats that face them and make the very best of the opportunities they have to get a good deal for their users, are cooperation and innovation.

If, like the first option, the strategic response of university libraries consists of continuing to do the same thing, because it was a successful strategy in the past, we will be adopting an incorrect and fatal perspective, akin to having a turkey until Christmas arrives and then it disappears (Taleb N.N., 2008). In the best-case scenario, this strategy, that is a form of passive and isolationist independence, without changing the material and energy, puts us under threat of the second principle of thermodynamics, whose destiny does not forgive: a fossilised library, a species

¹ Neoliberalism is more than an economic model: it is a rationality model. As Wendy Brown explains “the metric of the market” makes it harder each time to justify investment in public services, like universities or libraries, well governments become “mere alternative actors in the market” and the citizens are seen as mere “investors and consumers and not as members of a democratic political body”. Services originally destined to democratise, assure equality of opportunities, proportion knowledge and strengthen popular sovereignty gives way to “valence economics” which direct the investment in “human capital” towards alternatives with market value. The function of the universities themselves is being oriented towards mere work training without any humanistic education horizon for the citizen. Should university libraries give in meekly and passively to this objective? (Cfr. Brown, W., 2015).

of functional decoration, then “if the exchange rate abroad exceeds the exchange rate at home, the end is in sight” (Welch, 2001). It is, precisely, to sidestep this strategy why some university library analysts post that, if the current generation of librarians don’t introduce radical changes in the role of the libraries, their continuity is threatened (Anglada, 2014).

Luckily, there is a second option to explore, that of active independence. It is the option that supports innovation with the purpose of change to maintain our identity and continue living. Changing things, as Lampedusa pointed out, in order to preserve our understanding and develop it, but in a different way. Innovating on the basis of greater expectations, mobility, technology and social factors (as well as pre-existing ones), seeing the rebuilding of society based on cooperation as “the last frontier in order to avoid definitive and irreversible extinction in the face of the spectacular rise of uncertainty” (Wagensberg, 2010).

Innovating can not be an end as such, nor does it guarantee a better result, but it is essential in a context of social change, technological change and with a shortage of resources. Well focussed innovation should reverberate in all areas of library management and all types of resources: human, technical, space, economics and service. Innovation is not, nor should it be, exclusively about technology. There is evidence that technology offers a potent and transversal base to innovate in a strongly impulsive world. Innovation can be disruptive or radical, but you can also innovate by means of optimisation, performing traditional tasks more efficiently or effectively, making best use of existing resources. Both ways of innovating are compatible and complementary.

Innovation in the real world requires a lot of cooperation. Some sources of innovation are more sustainable than others and there is no doubt that innovation based on the cooperation of many people and many institutions is one of them. As Taleb mentioned, innovation offers some explosive advantages, it is what in mathematics is called a super-additive function, that, one plus one plus one is more, much more, than three. It is purely non-linear with some explosive benefits, and although we can’t know the future, one thing we can do is create an environment that facilitates these collaborations and establishes bases of prosperity (Taleb, N. N., 2013).

Cooperating is in no way something new for libraries. The explosion of published information, since halfway through the nineteenth century, forced libraries to go outside of their secular isolation and bet on professional association and mutual collaboration at a national and international scale. The twenty first

century has forced us to seek ever-deepening cooperation, reorienting local and regional collaboration and aligning it in the setting of a more intense international cooperation and at a new scale, at a global scale, at a web scale. In our world, cooperation and innovation go hand in hand: “big innovation requires big collaboration” (OCLC, 2011).

2. Cooperation and innovation in the networked world

We live in an increasingly networked world. The availability of electronics, especially mobile technology, is transforming the way in which we do things and how we communicate daily. Through them we exchange both personal and professional messages, we order shopping and we pay for it, we look at how to get to a place, we listen to music, we make plans, cultivate hobbies and play with others, read the news, take photos and videos and send them. The social web is transforming social relationships at all levels, also in academia, in education and research. Today, to attract researchers to libraries, it is necessary to offer them new services of assessment, collaboration or support, just the digital library gets their basic interest. The virtual space has supplanted completely the physical space of the old newspaper libraries. The web and the services it incorporates have converted libraries into hubs of communication and information for its users, including the use of on-site services, like checking out books or attending training courses.

In this digital and network context, innovation in services for users always requires a strong technology source. But technology is expensive. Increasingly, libraries require more information support and powerful software infrastructures. Investing in and realising ongoing information developments at the local level to sustain new services and improve existing ones is not within the reach of most libraries by themselves.

“The development of services based on technology cannot be addressed in an individual way, nor by small local networks. It is fundamental to work and build the future of libraries together. It will not be possible to lead or manage libraries in a handcrafted and closed way. Libraries should bet clearly on a strategy of togetherness to fundamentally face the current socio-economic panorama, to cut back on spend where budgets have decreased, to grow the collection, to change the demand for physical materials towards digital.” (Strategic Group for the Prospective Study of the Library in the New Information and Social Environment, 2013).

The majority of libraries experience similar problems and threats, so it makes sense to use the network,

which promotes cooperation and exchange, as the best possible way to innovate together and benefit from it jointly. “It is better to innovate together than apart; it is very easy to identify networks and opportunities and collaborate in order to leverage them. To innovate you must cooperate” (OCLC, 2011).

This way provides the logical thinking that libraries share cooperatively big technological platforms equipped with the fundamental infrastructure that offers their services and manages them at a web level. “Public administrators lose influence and this should give libraries more autonomy. (...) The libraries should learn to delegate part of the technical and internal tasks that are currently realised in cooperative entities” (Strategic Group for the Prospective Study about the Library in the New Information and Social Environment, 2013). This is the philosophy that underlies cloud technology employed by the platforms of the latest generation of library management, that offers an accessible and continually upgradable shared infrastructure from which to customise, via APIs, services for our users with minimal information development and that can even be shared in the community for reuse by other libraries. This scalability and continued adaptability is not in the scope of the old integrated library management systems that are locally installed, where functionality to administer electronic information is, also, very limited.

Sharing infrastructure offers a solid base for sharing efforts and obtaining common objectives, it removes the need for support work and the investment and specialised personnel involved, in a context of resource constraints. The larger the community that shares the same infrastructure, the cheaper it will be to maintain and the better the input of ideas will be to improve it and orientate developments that sustain better end services for our users. Collective innovation fosters more and better innovation. In a global networked world, the libraries of the world should collaborate with each other and on the largest possible scale, to reinforce the best of their services, which results, also, in a better perception of their functions. Offering cooperative innovation to society or, in the first instance, to universities, in the case of university libraries, will guarantee continuing adaptation to satisfy our changing needs and it will offer evidence of the urgency to maintain and increase investment in libraries and their undeniable use to advance knowledge and improve society.

In that respect, we think that OCLC offers considerable advantages as a large library technology partner. OCLC is an international non-profit organisation, supported cooperatively by around 17,000 libraries worldwide, created and governed by

and for libraries. For half a century, it has been promoting cooperative services, leading research and innovators in libraries. If it remains faithful to its identity, it is not foreseeable that either sources of underlying investment, or alternative lines of business, or commercial merger with other businesses can alter its line of work, which is none other than to follow the guidelines set by its member libraries. OCLC is the Amazon, Google or Facebook of the library world, but, the significant difference being from these big corporations, is that the technological global infrastructure that OCLC provides libraries does not operate under any other spirit or interest than that of promoting the success of libraries. In fact, the commercial benefits obtained through OCLC are reinvested, in a transparent form², in library research and in the development of their services. “Unlike other providers of technology-based solutions, at OCLC there is no influence from shareholders, investors or risk capital groups that prioritise obtaining benefits instead of the real needs of libraries” (Eíto-Brun, 2016).

The Complutense Library supports a strategy based on innovation and cooperation, and so we have put our confidence in, what seems to us, the most powerful technological innovation of the current library world: the library services platform WMS (WorldShare Management Services) from OCLC. WMS allows us to innovate in ways that innovation analysts (from Schumpeter at OCDE and Eurostat and, more recently, the philosopher Javier Echevarría) state, have particular characteristics. Among them, the following stand out:

- Product innovation: The WorldCat catalogue and its associated knowledge base (Knowledge Database), also integrated in WMS, allows our library to take a huge leap in terms of scale and move from a specific inventory (local) to an inventory of global information resources. There is no comparable structured database that can bring together such volumes of scholarly output in both printed and digital formats. The difference is enormous.
- Process innovation: working directly with this global inventory allows for the connection and simplification of internal workflows, principally in the relationships with processes in acquisitions, cataloguing and authorities, which free up, in some areas, staff resources.
- Linguistic innovation: following the rules of the semantic web, OCLC has converted and

² Look at the OCLC Annual Report 2016-2017: <https://www.oclc.org/en/annual-report/2017/home.html>.

coded as linked data the historical metadata record of the expressed library collective, until now, in MARC21. In 2017, there were already more than 215 million entities (people, organisations, places, thematic). We can't enter into the analysis of linked data here, a variety of techno-languages which are at the heart of this innovation (Echevarría, 2017), but point out that this has a huge impact on communication.

- Communication innovation: this innovation results from the pragmatic value of the previous innovation (the use is a value of the success of innovations) and it is confirmed by the fact that computers, directly understand coded messages as linked data, in a way that, library data (metadata) is directly understood by web search engines, engines that are a preferred tool for users starting their research. The result is that the described resources in our catalogues, converted into linked data, can make assertions about real global entities and merge, at the same time, with other sources of data outside of the library world: "The web of documents does not allow these milestones because natural language is ambiguous and variable and the things that people know are buried in a sea of texts" (Godby, Wang & Mixter, 2015), a sea that the historical work of metadata creation, effected by libraries, has provided semantic intelligence for.

3. New ways for cooperation and innovation in university libraries

In the twenty first century, technological and social changes are accelerating faster than in the twentieth century. However undeniable the benefits derived from technological progress may be, the global economic model under which they are being produced, is also deepening social disparities and inequalities in access to technology. The digital gap, which impedes access to the network and opportunities for millions of inhabitants, in both the first and third world, the threat of the network of networks which creates a closed box of information and services behind paywalls and in addition, the manipulation of information to conceal useful and verified information from citizens³ are

³ This is the central theory of the book by economics professor, Max Otte, *The Crash of Information: The Mechanisms for the Lack of Daily Information* (Ariel, Barcelona, 2010) and his explanation of what happened in the recent financial crises: the current hyper capitalism has entered a neo-feudal phase in which the states submit to the greedy financial manoeuvres of large corporations, which in

obvious threats to social progress. In the global twenty first century world, it is more necessary than ever that libraries continue being social tools, promoting democratised, universal and free access to quality information matching the needs of all citizens around the world.

If we focus now on the paradigm that university libraries serve, we also see it in light and shadow. Our users live in a networked world, which is transforming social relations, the research community and teaching and learning in all its forms. University libraries are forced to move towards a hybrid reality between print and digital, where the digital requires more and more economic, technical and management effort. They must insist on finding ways to access the virtual campus to continue being a part of the teaching-learning process; in supporting teaching research and innovation; in better advising about emerging themes like intellectual property on the network and in finding ways of communication and cooperation with their users, for example through the work of social networks, to be clear about what they may need from libraries and how to offer it. The shadows come mainly from the economic aspects, derived from the tendency towards disinvestment in public services and the cost increase in collections well above inflation. The aging of the increasingly scarce workforce and insufficient investment for technological modernisation and physical spaces of libraries are also a very negative influence.

Cooperation must be a basic tool in a context of shortages. Libraries centre most of their work on internal management and dedicate only a small part to external cooperation, we think it is necessary to reverse the tables: we must bet on cooperative management to facilitate internal work processes.

Cooperative spaces

Lack of resources prevents the adaptation of university library premises to new needs. The students require better spaces and greater opening hours, not only during exam time, but permanently, including the weekends. Students today, even more so than yesterday, look to the library rooms for study spaces in which they can concentrate and help each other in the difficult task of avoiding the permanent temptation of the games console or mobile. Beyond that, university library rooms are converting into habitual and

turn uses various ways of misinformation to meekly manipulate the citizens. The use of the book as a reflective and critical informative medium is, in the view of the author, one of the fundamental tools for avoiding that citizens succumb to widespread misinformation (see p. 290 and ss).

comfortable places for meetings between students, for the realisation of frequent group work and for their own social interaction, not virtually, but physically.

At the same time, university libraries are gradually acquiring less print and other tangible supports and devoting an increasing proportion of its budget to expensive electronic resources, mainly to the specialists, and often to the detriment of those aimed at students. Loans, (especially to students) are falling rapidly, interlibrary loans are decreasing, both for printed and digital documents, because students have alternatives to these services in the network (see the REBIUN annual statistics). Little is read in general, but it is evident that more and more is being read on screen (Spain. Ministry of Education, Culture and Sport, 2015). Without entering into a profound analysis of this data, it is imperative to redefine space for the tangible collections of university libraries, so that they will enjoy less prominence, no matter how much they remain in the medium and long-term our most important asset. It is necessary to give more space, central space, to the users for different uses, moving the physical collections towards the architectural exterior and find formulas, the more cooperative the better, to store huge masses of documents in large silos that efficiently centralise loan tasks (García García, 2017).

In the face of this gradual “disuse” of print and the acute lack of staff, both long-term trends, it will become necessary to focus collections and services in area or campus libraries where extensive facilities are still required. This will allow a commitment reduction in auxiliary tasks and a focus on the benefits of other demanded services and new services. Everything seems to indicate that the faculty library model, as was the departmental library before it, is already unsustainable. Foreign university libraries and also some in Spain, like the universities of Barcelona and Alcalá, have already implemented reforms and are leading the way for other libraries. Those who do not follow will surely see library services becoming more precarious⁴.

Beyond finding shared solutions for libraries at only one institution, we believe that it should be a commitment to strengthen cooperation among

institutions to establish shared solutions at regional and, even national levels. The old idea of cooperative storage, applied at a regional or national level, for university collections of little use, is today more necessary than ever. It should be accompanied, by a big national plan of preservation and withdrawal, which allows the best assessment of the deposit collections and creates preservation priority programmes for items where there are few joint stocks. In our opinion, these matters should be prioritised by our regional consortia and by REBIUN, as they are in other countries, for example in the UK with the National UK Research Reserve (UKRR) programme⁵.

Cooperation in the acquisition of information resources

“The periodicals crisis” which referred, in the first decade of our century, to the excessive increases in the costs of scientific journals—could be renamed as “the crisis of electronic resources” now referring to the monopolistic concentration in an increasingly small number of large international providers of most of the important information resources, already fully digital including magazines, e-books, videos, platforms and scientific portals.

Without alternative global management strategies, university libraries will continue to be loyal and submissive collaborators to the large multinationals in the gigantic business of academic and scientific information. Unwittingly, libraries are being used by large multinationals, like the very researchers they serve. The network is well known: researchers, generally belonging to public institutions, generate research, that to be recognised must be published in the journals with the most impact in the subject area. In order to increase said impact, the most reputable researchers, generally working in public research projects, pay to openly publish, so their articles can be widely read and cited, regardless of whether or not the journal is subscribed to by their institution. Researchers also carry out, usually without charge, peer review of articles, which selects content for publication. Next, the libraries acquire, at escalating and continuously increasing costs, said journals to be consulted by their researchers. Lastly, some big providers have created research evaluation platforms that suggest to researchers which journals and about which themes they should publish and dictates to the official research assessment agencies the criteria that must be employed to recognise the merits and the economic rewards of the evaluated researchers. Libraries often participate in the recruitment of these platforms and among their basic services of research

⁴ In this sense, The Master Plan of Reorganization of the Complutense University Madrid Structures in November 2016 (chapter II, page 73) affirms “The Library is experiencing a notable change as to its function and services, fundamentally due to new technologies and forms of access to information and documentation. It is working on a design according to the actual needs, studying the possible creation of Area Libraries, that allow improved service benefits and increased opening hours and are compatible with the maintenance of the wealth and bibliographic and documentary funds of the different centres. This study will be presented for discussion in due course”.

⁵ <http://www.ukrr.ac.uk>

support is the advice to researchers on how to use them in order to recognise the appropriate merits. Is it possible to break, in at least some way, this perverse vicious cycle?⁶

Let's clarify that it would not at all be about finishing with the editors and commercial academic and scientific information providers, but in every case to counterbalance their monopolistic dictatorship through cooperative actions that limit to the greatest possible extent the pillaging of public money that is taking place. The editors argue that without them the whole system of academic research evaluation would go under and that their contribution is basically for the progress of science. Firstly, it is questionable if, through cooperative actions on the part of academic institutions and assessment agencies, a real effort was made to achieve an alternative; the second aspect is basically a consequence of not doing the former.

From our point of view, in summary, the buying of electronic collections, is amongst the most important cooperative actions for libraries. They should actively and collaboratively put in place the following:

- The “green path” of the open archives movement must be strongly supported, but it will not be an alternative to the status quo until it is accompanied by a new international quality assessment system for research materials uploaded to public access repositories. Libraries should be collaborating actively in the achievement of this objective with researchers and assessment agencies. In the digital era, it has to be possible to cooperatively arbitrate alternative effective formulas for the dissemination and evaluation of research.
- Subscription and open access arrangements (“the golden way”) should be negotiated together and not separately, so that researchers of an institution can be published free of charge in journals that they subscribe to. This can't be achieved by one institution alone, it needs the coordination of institutions at national or international levels.
- National licenses for the acquisition of all information resources of major interest should be put in place. Spain has a big delay compared to other countries in our

environment, like the Nordic countries, UK, Portugal or Switzerland. They should adopt very firm negotiator positions, willing even to boycott all interested parties in the case of not reaching reasonable agreements, not only moderate price increases. What has been saved—and we could speak for millions of euros—could be directly invested in the promotion of research. The national boycotts—like the one carried out by German libraries with an important publisher in 2017 and also The Cost of Knowledge initiative⁷—facing big providers who shamelessly abuse their monopolistic position should be encouraged to force publishers to sign national and international licenses that allow for a rethinking of subscription costs and control of price increases. It is necessary to make suppliers understand, above all, that their business model must change, because it is not possible to continue abusing increasingly scarce public money indefinitely.

- It is imperative that a Spanish national coordinating body with real economic and technical capacity is provided, Jisc in the UK being an example, leading national projects and assigning Spain to international projects that finance and support research from its very base. In our opinion, it is necessary to redouble the efforts of REBIUN to mobilise CRUE and the collections and research associations with the objective of managing a stable national fund, which responds to a true national research policy and sustaining a national licenses approach.
- In the absence of national or pluri-national licenses, it should prioritise flexibility in groups or library consortia, so that all member institutions are allowed to participate freely in the acquisition of any resources.

Cooperation in the integrated library management tools

Large editorial groups and large aggregators have created digital platforms so that libraries subscribing to their prohibitive services can give access to their users through these platforms. Libraries have therefore become mere managers of metadata and access points to these remote platforms without being in true possession of the content, unlike the printed information paradigm. When the library acquires ownership of electronic documents, what they really acquire is a right that is clearly uncertain in the

⁶ On the other hand, we only aim it as way of reflection, isn't the “scientific production” being converted, in the first instance, as part of a gigantic business in which the market slogans impose the conditions to which sciences and researchers have to give in if they want to prosper? Already at the end of the 60s Guy Debord pointed out the dangers that beset capital society with intellectual work submitted to the same processes and demands as that of other manufacturing jobs (see Debord, G., 1999).

⁷ <http://thecostofknowledge.com>

medium and long term. The so-called “post cancellation rights” resulting in many guarantees, usually consists of the delivery on a pen drive or similar device of the subscribed content without a search or query tool, or the right to subsequently access the content, this obligates the library to continue annual payment to access the platform. Could such platforms and companies be eternal? Will they last a thousand years like some printed manuscripts in the library?

The most recent phase of this “single model” of payment for digital remote access to academic and scientific information deposited on the suppliers’ websites is that the large aggregators are no longer satisfied with controlling the main channels for content selling, they are now moving to control integrated library management tools as well. Facing these commercial strategies, although legitimate from a business point of view, are libraries going to do anything other than accept them passively and continue to lose independence and self-management capacity? The management software of our libraries should be, we think, neutral with regards to content management, otherwise it is evident that its functionality is susceptible to being conditioned by the content interests of the software provider, favouring integration and delivery of their content on the library platform over other content competitors.

Libraries can and should advance more cooperatively in the management of bibliographic records and metadata in general. It is no longer unrealistic to think that all library catalogues worldwide could form a single collective catalogue. Until now collective catalogues have normally been aggregated locally and regionally, specialised or national records are exported from impoverished versions of pre-existing library catalogues from various institutions. This concept can and should be taken further. We should “take the necessary agreements that allow the cataloguing of documents to be carried out in a less duplicated manner” (Strategic Group for the Prospective Study about the Library in the New Information and Social Environment, 2013) and no longer simply use old tools meant for the mere capture of records such as Z39.50. All libraries could work directly in the same shared catalogue in a way that, jointly, we can improve it for the good of all without duplicating effort unnecessarily.

We are conscious of our competitive environment: the network itself, the web, through its great search engines, has become a de facto large digital global library. If libraries want to conserve their differentiating role of offering contrasting and quality information and, at the same time, continue to be

useful, it is evident that we must advance in line with global services like Google Scholar. If the catalogues of the world’s libraries formed a single global catalogue, it is obvious that our visibility on the network would be much better. Maybe we would not be the first point of access for our users, but we would have much more presence. Apart from that, thanks to the search syndication protocols established by OCLC with the major search engines for the result pages to incorporate WorldCat records, a user of, for example, our University can easily access from Google the monograph stock at the Complutense Library. Library collections will not only be searchable via WorldCat, but also through external websites (Google, Yahoo, Mendeley, Yelp, Goodreads, Family Search, EasyBib, etc.) with whom OCLC have established agreements to give visibility to the WorldCat records. It has been calculated that these agreements generate around a million clicks per month which, coming from external sites, refers them to websites of OCLC member libraries” (Éito-Brun, 2016).

Also, libraries could work on shared authority files at the national level instead of generating and maintaining each one of their own files, which means a waste of work and considerable energy, with little added value. We could, also, collaborate harmoniously in the development of the semantic web through coordinated works for the generation of linked open data (LOD). Everything indicates that the future use of academic library catalogues goes through the creation of a sort of semantically enriched world catalogue with links created from participating libraries in accordance with international standards. “Particularly in university libraries, the adoption of appropriate metadata and linked data policies is the basis for producing interchangeable records that go beyond the cataloguing of books” (Strategic Group for the Prospective Study about the Library in the New Information and Social Environment, 2013). We could even work in the collaborative creation of bibliographic data infrastructures at a national and international level around the base of shared technological platforms. In the management of electronic resources, it would be ideal for all the libraries to share a global knowledge base, from which all libraries can drink in order to exchange and reuse information about providers, collections, commercial packages, licenses

None of this is science fiction. We think that there is already a big project in the making that can allow all this to be realised: the one that OCLC embodies.

- Its collective catalogue, WorldCat, has, as the name suggests, the vocation of converting itself into a large, single, global catalogue of all libraries, and is already today, by far, the

biggest in the world with around 400 million records in more than 450 languages.

- OCLC is a leading organisation in terms of library research, such as their contributions to metadata management projects referred to linked data (OCLC Linked Data Strategy) or cataloguing formats.
- OCLC's integrated management platform, WorldShare Management Services (WMS), is the only one that allows for an effective shared cataloguing, incorporating national authority files and makes possible the integral management of both electronic and print collections. "In contrast to a conventional integrated system, WMS is characterised as a cloud solution, incorporating access to WorldCat and facilitating the reuse of data shared by all OCLC libraries" (Eito-Brun, 2016). Including, also, a very powerful statistical analysis function that allows both detailed tracking of internal management and institutional comparison (benchmarking) with other libraries using WMS.
- The knowledge base of WMS, integrated in WorldCat Discovery Services and enriched by the metadata of around 6,580 global information providers, with those that OCLC has agreements with, offers, in our opinion, the best platform for the management of electronic resources (maintaining URLs, range, access management...) and the sharing and reuse communally of all types of information about collections, providers and licenses, and even to share freely local digital collections. Given that OCLC is not a commercial provider of content, it has a clear competitive advantage to obtain metadata from all suppliers, who often look at each other with suspicion for reasons of business competition over the sale of content.
- OCLC is driving, also, in different countries the creation of regional and national bibliographic data infrastructures, like the one

recently with Jisc, which will give a service to more than 90 UK academic libraries, in line with previous projects in Holland, Germany, France, Switzerland or Australia.

- OCLC also supplies a collaborative platform called OCLC Community Center which contains support information about WMS, guides and manuals, tutorials, discussion lists, RSS subjects... It allows for the sharing of information with colleagues worldwide, initiating questions and petitions to improve WMS, petitions that, through their Regional Council structures, support OCLC decision making.

Cooperative services

Library cooperation always has one main objective, that is to offer the best services to our users. It is evident that we must encourage local and regional cooperation as much as possible arriving at precise agreements in order to collaboratively offer and improve local services to our users, not only between university libraries, but also public and private libraries too. Institutional cooperation in general should also be strengthened. These university libraries that know to look for synergies with other services and instances of the university will, logically, find greater recognition and support for their role. Libraries must also, more than ever, monitor the context in which they operate and seize the opportunities it offers them. They should be open to cooperate with other cultural institutions, like archives or museums and, also collaborate with content and technology providers in initiatives to improve user services.

That does not mean we should stop cooperatively promoting services on a larger scale, on a web scale. In the first instance, to give greater visibility to our collections through a global web catalogue and global search tools. In this respect, we think that WorldCat Discovery in WMS, launched in 2014, offers our users a new level of experience in bibliographic searching. The fact of searching against all the content of WorldCat can make you fear a lot of noise in the results. However, it offers a new horizon to the user and incorporates effective mechanisms designed precisely to guide it:

- They always show in the first position the results from the user's library and the regional or national bibliographic data infrastructures of which that library is a part. In any case, the user can easily restrict the search to their own local catalogue.
- By the means of the group concept (cluster) of FRBR, a single record appears as a

Ejemplos de infraestructuras regionales y nacionales de datos

| Institution | Main function | Related services |
|---|--|---------------------------------------|
| GGC / CBS Netherlands | Central Cataloging Authority file maintenance | Discovery, ILL, ... |
| German Hubs - GBV, BSZ, Hebis - German National Library | Central Cataloging Central Cataloging Authority file maintenance | Discovery, ILL, ... Discovery, ... |
| National Library Australia | Central Cataloging | Discovery, ILL |
| SwissBib, Switzerland | Aggregated Catalog | Discovery |
| ABES & National Library France | Central Cataloging Authority file maintenance | Discovery, ILL |
| JISC, UK (academics) | Aggregated Catalog | Discovery, Analytics |
| Unity UK (publics) | Aggregated Catalog | Discovery, ILL |
| ISNI | Aggregated authority files | ISNI assignment |

manifestation of all editions and formats of the same title, that the user can separate before or after the search. The clusters or record groups are the result of the project GLIMIR (Global Library Manifestation Identifier), whose objective is assigning a unique manifestation identifier to the WorldCat records that represents the same work concept, like parallel records in different languages and the equivalent works from the point of view of the user: original printed text, microform version, e-book version, reprint version, original film, DVD reproduction... (Gatenby, 2012).

- Searches based on high quality metadata against massive inventories of very structured information, like WorldCat, produce much less noise than those made against the full text of a simple local catalogue⁸. The differential factor that brings the search made by Discovery in WMS against WorldCat is that it is made on metadata and authority files of proven quality that librarians have been building and debugging for decades, and whose perfect complement should be a semantic architecture of linked data⁹. However, in the search field against full text, libraries will hardly offer competitive advantages over Google Scholar or Google Books.
- The discovery of relevant documents that your library does not have induces the user to request them through OCLC's interlibrary loan network, also integrated with WMS.

With regards to reference information services, the network is providing our users with a very interesting alternative that all, librarians and users, use daily: Wikipedia. A few years ago, librarians looked at this resource with contempt and discouraged the use of it. We had reasons for doing it, since Wikipedia never offered the same quality as our reference services. This situation has now changed. Wikipedia has improved greatly thanks to the cooperative work of thousands of people worldwide and in different languages. It is a social process of permanent improvement, also based on the semantic web, which has converted Wikipedia into an indisputable tool as a global reference resource. For this reason, OCLC has put underway a collaborative pilot project in with Wikipedia so that groups of librarians contribute to improve or register

new entries. The participating librarians have been aware that they were creating reference information, not sporadically for a single user who has a query, but permanently for all web users. This is a great opportunity for librarians around the world to provide cooperative reference information services within a network, that will form part, also, of the semantic framework of a global linked data architecture, in which it is and should be Wikipedia. At the same time, OCLC and Wikipedia are working together to make it easier for editors to link Wikipedia citations to millions of library materials present in WorldCat¹⁰.

Beyond the universal visibility of bibliographic information, the web also allows a high level of service personalisation: "librarians should maintain personalised services that differentiate them, in order to get away from the so-called Coffman threat, where a digital provider comes along and offers the institution and users a service similar to that of the library, (New Information and Social Environment, 2013). Based on a design adapted to mobile technologies, the library should facilitate the possibility of making and sharing comments, like in any other web service, and recommendations based on user profiles; it should provide information and online training, use social and academic networks to inform about news or events, advise online researchers, etc. These and many other web services can be reinforced based on cooperative technological platforms.

It is clear that big data and analysis of multiple standard institutional datasets, as well as the monitoring of our own users' needs will give libraries insights into service design that will be more personalised and at the same time more collectively useful, in the face of the manipulative use of that same individual and collective data carried out by businesses for their own exclusive benefit. An active librarian community that shares a network platform can exchange service and application development initiatives in a way that proves very useful for users at multiple libraries. We are only starting to understand the potential of global cooperation on a web-based basis in the development and improvement of library services.

4. The Complutense Library and its support for global cooperation and innovation

For more than a decade, the Complutense Library has been strongly participating in large global cooperative projects. Below we are going to refer to, in brief, the three most important. The lack of a national collection

⁸ Beall, J (2008). The Weaknesses of Full -Text Searching. The Journal of Academic Librarianship, v. 34, n. 5. <https://doi.org/10.1016/j.acalib.2008.06.007>

⁹ Jindal, V.; Bawa, S.; Batra, S. (2014): A review of ranking approaches for semantic search on Web. Information Processing and Management, n. 50. <https://doi.org/10.1016/j.ipm.2013.10.004>

¹⁰ <https://www.oclc.org/es/news/releases/2017/201713dublin.html>

digitisation and preservation policy and of appropriate funding has orientated the library to focus on this area. We are participating in a large international digitisation project of the stock of libraries sponsored by Google and have also joined the most important cooperative project for the preservation of digital patrimonial collections: HathiTrust Digital Library. Also, the need to give more visibility to our collections and to manage them in a cooperative global framework, based around a solvent technological infrastructure, has provided the justification for the Complutense Library's commitment to progressing integration with OCLC and the adoption of their library management system, WMS.

Digitisation project of Google and Complutense Library

Since 1995, the Complutense University Madrid's Library has created the largest collection of digitised books in Spain. Its objective is to guarantee public access and preserve for the long-term, knowledge generated by this university through its bibliographic heritage.



To date, they have digitised more than 165,000 books—145,000 old stock and 20,000 doctoral theses—. These stocks are also joined by other digital collections, like the Academic Magazines published by UCM—with more than 45,000 articles—; the Digital Press of the Information Science Faculty—with 500,000 scanned periodicals (with restricted access from the library itself and for research purposes to guarantee copyright)—; 49,742 engravings belonging to the Dioscorides Digital Library; more than 38,000 documents deposited in the UCM Institutional E-Prints Archive; part of the photographic archive of the Spanish Communist Party; the Rubén Darío Archive; a collection of Japanese engravings and the drawings from the Academy of the Faculty of Fine Arts.

Many of these documents were digitised through Google Books. The first five libraries in this project were New York Public Library and the Universities of Harvard, Michigan, Oxford and Stanford. In 2006,

California University and Complutense University Madrid joined, the first non-anglicised member of the project.

The massive digitisation project with Google has meant the creation of a large database for the Complutense University gathered, along with digital versions of the book and documentation relating to the preservation state of each copy. This allowed them to have important information on the valuable specimens and those that needed immediate action to avoid deterioration. In this sense, hundreds of pages of shabby books, that had never been opened, were able to be digitised and multiple restorations were made to them. But the most remarkable work was the inclusion in the automated library catalogue of a very important part of the old stock that was still to be introduced: 220,000 examples as far as the 19th century. Currently, 76.14% of books prior to 1870 have been digitised, and also their conservation conditions have improved substantially.

Access to the works of Complutense through Google Books has multiplied their global visibility. The maximum international reach of rich heritage documents of the UCM is a fundamental objective of our library. However, also it is important to emphasise that the Complutense University is the owner of the digital copy of Complutense works digitised by Google, so that, with independence from Google, our library can guarantee the future of permanent and free public access to these works.

Integration in HathiTrust

Complutense University became a partner of the HathiTrust Digital Library in November 2010, an association that unites more than a hundred of the world's leading academic and research libraries, including the Library of Congress. The libraries that integrate with HathiTrust collaborate in the creation of a digital library destined to assure the long-term preservation and accessibility of our digitised stocks. The number of digitised volumes surpasses 13 million, of which about 5 are in the public domain.

Aware that digital preservation in the medium and long term is only possible through cooperative actions of academic institutions carried out in accordance with international standards, and since in Spain and Europe there was no collaboration of this nature, the Complutense Library decided to locate digital copies of their collections in the HathiTrust repository.

The Library of Complutense University has more than 75,000 digitised books free of copyright in HathiTrust, basically coming from the BUC-Google project, as well as other stocks digitised locally. The users of the UCM, like members of the HathiTrust, have the possibility to access the HathiTrust, create subsets inside the general collection and make them public, consult the metadata included with the digitised works and, even to download complete works.



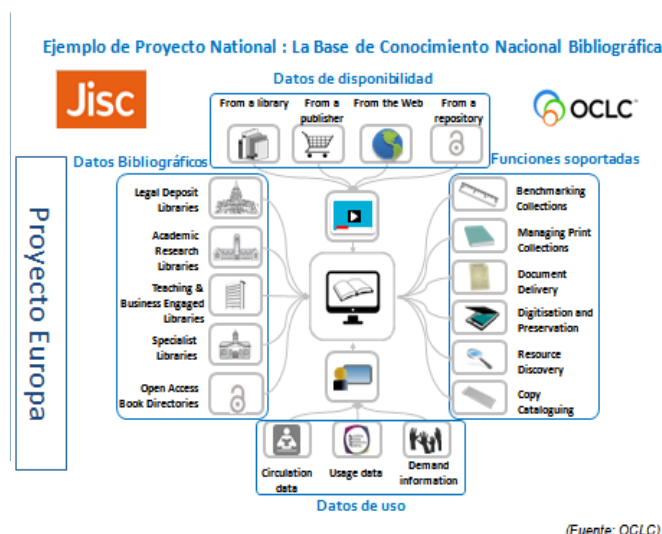
WMS Project (OCLC)

At UCM, we followed for some years with curiosity the interesting news of OCLC, like the launch in 2011 of the new cooperative library management system WMS, their research about user behaviour¹¹ and their momentum in pioneering linked data projects and new bibliographic formats.

The Complutense Library added to WorldCat the records of their physical collections in 2015 and subscribed to OCLC's Interlibrary Loan programme, which although integrated as a function in WMS, can be contracted separately. This gave our collection great international visibility, which is evident from the high number of interlibrary loan requests received from libraries around the world, particularly in America. The OCLC Interlibrary Loan programme administers requests and supplies through the IFM system, allowing for the dispensing of individual invoices and simply notes them, at the end of the year, a single invoice or single subscription note, if the supply has been more than has been requested, the subscription note can be discounted, for example, from the subscription of WorldCat.

¹¹ See, for example, the report: Connaway, Lynn Silipigni, comp. 2015. The Library in the Life of the User: Engaging with. People Where They Live and Learn. Dublin, Ohio: OCLC Research. <http://www.oclc.org/content/dam/research/publications/2015/oclc-research-library-in-life-of-user.pdf>

In 2016, we decided to sign up to the OCLC e-Services package (Collection Manager + EZproxy) so



(Fuente: OCLC)

that we could add to WorldCat the metadata of our electronic collections and assess the potential of its knowledge base for the management of electronic resources too. The electronic resource management work carried out on the Collection Manager base of WMS convinced us of the magnificent benefits of the integral management of electronic resources, from selection and acquisition to the management of access through EZproxy.

In 2017, we worked in establishing agreements for a pilot phase to create in the future, with other Spanish libraries that join the project, a national file of authorities and including a national infrastructure of bibliographic data from OCLC platforms, taking as an example the recent agreement (February 2017) reached between OCLC and Jisc in the UK.

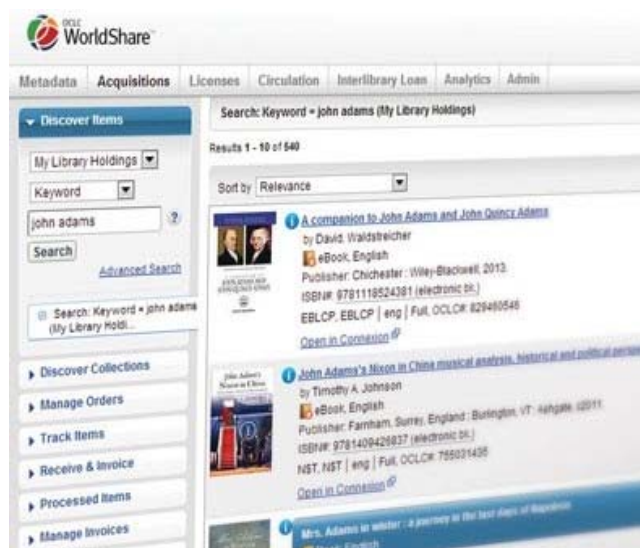
The task of enriching authority records carried out in the last few years in our library also found the best continuity by adding the LOD project from OCLC.

This framework of work with OCLC, constitutes an educated decision in the search for cooperative solutions for library management at all levels, it explains that only the library management system of OCLC, WMS, could adapt to the needs of our library.

It is a library management system for which they have already signed up more than 500 libraries worldwide and to which some 100 libraries are added annually. Only WMS makes it possible, for example, to participate in an effective international global cooperative and multilingual cataloguing programme based on the master records of the collective global catalogue, WorldCat.

On the other hand, as we intended to express in this article, we are convinced that, at this point in the twenty first century, only cooperation on the largest possible scale can allow libraries to fulfil their role in the global network world. A not for profit organisation, specialising in cooperative library management and governed by their own libraries seems to us, without doubt, the best option for outsourcing, in a commercially neutral manner with respect to bibliographic content, our management system and trust in its technical development in the medium and long-term, faced with the uncertainties and lower expectations of continuing to bet, as in the past, for systems sustained by purely commercial businesses, however good the products they may offer.

considered, libraries and librarians will not be the strongest in this society. Our strength—and in this case our survival—is and in our opinion can only be with intelligent and innovative cooperation.



5. Conclusion

We hope that many other libraries in Spain and in the world, share this strategic vision and they join our decision for big innovative cooperative projects on a global scale in the library environment. In uniting our efforts, we are better prepared to respond to the new needs of our users arising from a networked world.

It is often misunderstood that according to the theory of evolution, only the strongest survive. That error comes from the capitalist ideology which promotes selfishness and individualism at all costs, that it was, without doubt, one of the great inspirations of evolutionism of the nineteenth century. But, according to Darwin, it is not survival of the fittest, but rather survival of the best adapted, and already in 1902 Kropotkin, another of the great theorists of evolutionism, defended—from the texts of Darwin himself, although against the ultra-liberal vision of most of its disciples—that the best adaptative strategy for survival is, against Malthusian individualism, cooperation (Kropotkin, 2016). Libraries, like all public services, are vulnerable. Individually

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